VII.—*Note on the occasional existence of fresh water on the surface of the ocean. By Mr.* C. Brownlow.

It is stated in a recent paper by Arago, on the subject of Artesian Wells, upon the authority of one of our most accurate observers—Buchanan—that, when on his way to India, he found fresh water more than one hundred miles from land, to the eastward of the Bay of Bengal. Arago has adduced this fact to prove, that springs rise to the surface of the globe from unknown depths. He is doubtless correct in this assertion, as long as he confines his observations to land phenomena—many causes, however, led me to doubt that *fresh* water could *rise* to the surface at sea, among which may be enumerated the effects of tides, the disturbance and friction of one fluid passing up through the other, and the strong affinity which aids their combination while thus in motion.

The fact that fresh water deposited in the shape of rain, remains unmixed with the salt water beneath, for many hours, during calm weather; that it is found at sea, around the mouths of large rivers, during serene days, at an almost incredible distance, led me to seek for an explanation of Buchanan's fact, in some less embarrassing theory than the one which Arago has adopted. I accordingly applied to Mr. Sinclair, one of the most experienced and intelligent of the members of the Pilot service, who acquainted me with the following fact.

In the month of October, 1803, in connection with Branch Pilot Bason, he took charge of the *Gungava*, an Arab ship, from Muscat, laden with horses. The passage of the vessel had been long and tedious, and they were deliberating on throwing their horses overboard, when one of the men, who had been bathing on a hatch, came and reported that the water along side was *fresh;* a bucket was thrown over, which went something below the surface, and the water brought up was salt!—on further examination, it was found that the water *on the surface* was perfectly fresh. The vessel was supplied from this source, and the cargo saved. Another member of the same body informs me, that during the Burmese war, he obtained fresh water thus when taking troops to Rangoon*.

It appears more reasonable to account for this fact, by referring to the increased impulse of the waters discharged from the Ganges during the rains, to the quantity of fresh water actually deposited on the surface of the sea, at this season of the year, and to the laws of the specific gravity which determine the relative positions of fluid bodies, than to adopt a theory which at once sets these aside, and does violence to an established principle in physics: for these reasons I think Arago's inference open to objection.

* These instances occurred over that remarkable part of the bay, the "*swatch of no ground*," the depth of which renders Arago's theory still more untenable!